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NUMBER 2

1. Formosa Stands Guard off China Fisher
2. Congo's Katanga Is Top Uranium Source Hoopes
3. Portugal Holds on to Indian Colony of Goa Fisher & Gray
4. Threat to Church in Kent Recalls Pocahontas Aikman & Atwater
5. Colorado River Constantly Lures Explorers Fisher & Gray

J. BAYLOR ROBERTS

TATTOO MARKS TELL A STORY ON FORMOSA: SHE IS A TAIYAL AND SHE IS MARRIED

The forehead stripe is a mark worn by both men and women of the Taiyal tribe. The slanted cheek bands indicate marriage. Only the Taiyals, of Formosa's 131,000 aborigines, practice such tattooing. Their territory, in the northern part of the nationalist-China stronghold island (Bulletin No. 1), is reached by a rickety push-car railway that lurches seven miles over mountains and ravines.

Bulletin No. 1, October 9, 1950

Formosa Stands Guard off China

WITH international attention focused on Korea and other trouble spots in the Far East, the nationalist-China stronghold of Formosa has assumed a new importance as a goal of communists and a prize coveted again by Japan. President Truman has placed the island redoubt under protection of the Seventh Fleet while awaiting action by the United Nations or the formation of a peace treaty with Japan.

Formosa is the biggest island along the China coast south of Japan proper. At its northernmost point the nationalist base is only 665 miles from Kyushu, nearest major island of the Japanese archipelago, and much closer than that to the key American base at Okinawa in the Ryukyus. Luzon, in the Philippines, is a scant 225 miles from Formosa's south point. And at the narrowest portion of Formosa Strait the mainland of China lies only 85 miles away.

Americans Bombed and By-passed Formosa

These are "stone's-throw" distances in the air age, as the Japanese demonstrated during World War II. Formosa was then in their possession, and they used the island as a catapult for offensive action. The Japanese invasion of the Philippines was mounted from Formosa. Naval and air installations built up during decades of occupation proved their value.

But, for the most part, the island was on the outer edge of the subsequent great actions in World War II Pacific fighting. Americans bypassed it in pushing northward for the planned assault on Japan, but it was first necessary to neutralize the base by heavy air and naval bombardment.

Formosa is roughly oblong in shape. It is 245 miles long and 85 miles across at its greatest width. In area it equals Massachusetts, Connecticut, and Rhode Island combined. An official count in 1949 gave it a civilian population of more than 7,000,000, but refugee Chinese have since greatly swelled the total. An estimated 131,000 are aborigines (illustration, cover).

Nationalist China is reported to have seven large airfields on the island, and a number of smaller ones. Important naval bases are known to exist at Chilung (Kirun), on the northern end of Formosa, and at Kaohsiung (Takao), on the southwest side. Fertile lowlands comprise the island's west, making this coast one long potential beachhead.

Source of Most Natural Camphor

Taipei, the nationalist capital, is located near the northern tip. Its present citizens are indebted to the Japanese for planning the capital. Most of its modern buildings and boulevards were constructed by them. However, much of the island is primitive in development (illustration, next page).

Formosa was for many generations a station on sea lanes connecting Japan, the Philippines, and the Netherlands Indies. In normal times it

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UMI

B. ANTHONY STEWART

GRAVESEND'S HARBOR MASTER LEVELS HIS TELESCOPE ON SHIPS BOUND UPRIVER TO LONDON AND DOWN TO THE SEVEN SEAS

Gravesend, 27 miles downstream from London Bridge, is tied in with America's history not only by Pocahontas (Bulletin No. 4), but by numerous other historical personages. From its harbor in 1607 Henry Hudson set out on his search for the Northwest Passage; Benjamin Franklin landed at Gravesend on his first journey to England in 1724; and it was the point of departure for American pilgrimages of such well-known religious figures as George Fox (founder of the Society of Friends, commonly called Quakers) and John Wesley (founder of Methodism), in the 18th century.

Congo's Katanga Is Top Uranium Source

URANIUM and copper top the fabulous mineral production of the Katanga, southeast corner of the Belgian Congo, whence comes much of the uranium ore for making atomic bombs.

Cobalt, tin, zinc, lead, cadmium, silver, gold, and diamonds come from ancient rock veins at or near the surface in this mid-African region. They add up to make the remote Katanga second only to South Africa's Rand district among the continent's mining areas.

United States Takes Most Uranium

The Congo's Shinkolobwe Mine lies some 70 miles northwest of Elisabethville, the modern, comfortable capital of Katanga Province and hub of its mining district. Shinkolobwe holds half or more of the earth's known high-grade uranium ore. Discovered in 1915, the deposit was worked from 1921 on. The ore was shipped to Belgium, where radium was extracted.

Since the advent of the atomic age, the United States has taken most of the Katanga uranium. Although Shinkolobwe was dropped from maps issued during the war, its location and importance were well known to scientists working with radioactive minerals. Since the war, map secrecy regarding it has been lifted. A uranium-processing plant is under construction close to the mine.

Fifteen miles southwest of Elisabethville and barely a quarter-mile from the Northern Rhodesia border is the Kipushi copper mine. First worked in 1925, it has yielded more than a million tons of copper. Kipushi was a surface operation at first, as are the dozen other big copper diggings in the Katanga today. Deep shafts were sunk at Kipushi, however, when borings showed its rich copper oxides reached far below the surface.

Other pits operating at Jadotville, Kambove, Musonoi, and Kolwezi have helped establish the Katanga as a copper center surpassed only in the United States, Chile, and Canada. Kambove and other copper pits yield enough cobalt to rank the Katanga high in the production of this essential ingredient of stainless steels.

Livingstone and Rhodes Knew of Region's Treasures

The musical name Katanga belonged to a minor chief who ruled his tribes in this wild African interior some seven decades ago. Europeans originally applied it to a vague area somewhat larger than the present California-sized province, southernmost of the Belgian Congo's six. Most references to the Katanga today, however, concern the mineral-rich plateau that is properly the Haut-Katanga (High Katanga), covering roughly the southern half of the province.

Livingstone, Rhodes, and other pioneers in Africa interested themselves in the Katanga's treasures. Drawbacks in the battle against the wilderness were the sparsity of native population (illustration, next page), the shortage of power for mechanical mining, and the extreme difficulty of transportation to the coasts.

A Belgian Katanga Company was founded in 1891. English engineers

UMI

produced large quantities of sugar, tea, rice, and pineapples, and also contributed the bulk of the world's natural camphor.

Japan took possession of Formosa in 1895. Pending a peace treaty with Japan, it reverted, after World War II, to the Chinese, who had held it for many centuries. Early Portuguese sailors called the land Ilha Formosa, or "Beautiful Island"— an ironically poetic name today for a threatened and isolated island that strategists see as an anchored aircraft carrier potentially capable of commanding a large area of the Pacific.

NOTE: Formosa is shown on the National Geographic Society's map of China. Write the Society's headquarters, Washington 6, D. C., for a price list of maps.

For additional information, see "Formosa—Hot Spot of the East" ("Poor Little Rich Land—Formosa"), in the *National Geographic Magazine* for February, 1950; "I Lived on Formosa," January, 1945*; and "Japan and the Pacific," April, 1944. *(Issues marked with an asterisk are included on a special list of Magazines available to teachers in packets of ten for $1.00.)*

See also, in the GEOGRAPHIC SCHOOL BULLETINS, January 9, 1950, "Jap-Built Formosa City Is 'China' Capital"; "China's Formosa Is Raw-Material Storehouse," April 5, 1948; and "Formosa, Rugged Island of Tea and Camphor," April 14, 1947.

J. BAYLOR ROBERTS

ON FORMOSA'S PUSH-CAR RAILWAY, FREIGHT GETS THE RIGHT OF WAY

The man riding the tea-laden car stands ready to put on the brakes should his speed build up to more than eight miles an hour. Even so, the conveyance often jumps the track. Watching is a policeman-passenger bound the other way. His car had to be derailed to let the freight go by.

Bulletin No. 3, October 9, 1950

Portugal Holds on to Indian Colony of Goa

PORTUGAL'S refusal to discuss with India the possibility of giving up three Portuguese colonies on the Indian peninsula puts a temporary stop to the talk of transfer of the territories.

But India is not taking no for an answer and still hopes to annex the erstwhile rich and powerful colony of Gôa, along with two smaller Portuguese territories—Damão and Diu. All are located on the west coast of the Indian subcontinent.

Albuquerque Built Gôa as "Little Lisbon"

Early European traders, seeking the riches of the East, knew Gôa for its beautiful city of more than 200,000 residents. It was a flourishing trade mart four centuries ago in a Portuguese empire on which the sun never set. Today the old city is in crumbling ruins, and Nova Gôa (Pangim), built near by, does a small trade in minor commodities.

The Portuguese possession was born in fire and bloodshed. An aristocratic adventurer named Affonso de Albuquerque brought a fleet to Gôa in 1510, wrested the city from the King of Bijapur, and set about building a "little Lisbon."

A century later the city was in its heyday. Travelers have left glowing reports of its more than 100 churches and cathedrals, its palaces and fine homes. Colonial life was gay and showy; none of the dandies of the day would think of appearing in public without a retinue of richly adorned slaves and servants.

The reason for this wealth was Portugal's expanding empire. Far-flung maritime possessions had been obtained along the coasts of Brazil, east and west Africa, Malabar, Ceylon, Persia, Indochina, and the Malay archipelago. From these vantage points the Portuguese controlled trade routes while enjoying the lion's share of commerce with the Orient.

Enter the Dutch and British

Thriving Gôa became the principal outpost of Christendom in the East. Hundreds of Franciscans were trained there for missionary work. St. Francis Xavier taught many of them. When the "Apostle of the Indies" died on an island off the coast of China in 1552, his body was returned to Gôa's 16th-century Church of Bom Jesus.

The Dutch and British made militant inroads on Portuguese trade in the 17th century and gradually swallowed much of the empire. For a time Portugal itself fell under the domination of the Spanish crown, and more territories withered on the vine. Today the nation's holdings are limited to those in India, Timor in the East Indies, Macau in China—all administered from Gôa—and large areas in Africa.

Time and the encroaching jungle have obliterated all but a few scattered traces of old Gôa's magnificence. One portal remains of the palace built by Albuquerque. The Palace of the Inquisition, which once covered two acres, is a moldering ruin.

The present colony covers a total area of about 1,300 square miles.

UMI

were granted broad prospecting rights in 1900. Out of their collaboration came the Union Minière du Haut-Katanga (High Katanga Mining Co., Ltd.) in 1906. It is authorized to exploit the Katanga's mineral wealth until 1990.

The company and its subsidiaries planned Elisabethville and several mining and refining installations and communities. They are credited with a better-than-average job in providing for the welfare of the thousands of native workers who had to be imported from a distance.

The companies reached out to coal and water as sources of power. They laid rails northward to the navigable limit of the Congo River, southward to the Rhodesian railway connecting with Cape Town, westward to reach the Atlantic coast at Benguela's port, Lobito, and eastward to link with the line running to the Indian Ocean port of Beira.

NOTE: The Katanga may be located on the Society's map of Africa.

For additional information on the region, see "We Keep House on an Active Volcano," in the *National Geographic Magazine* for October, 1939; "Trans-Africa Safari," September, 1938*; and "Keeping House on the Congo," November, 1937.

See also, in the GEOGRAPHIC SCHOOL BULLETINS, November 21, 1949, "Belgian Congo Resources Spur Colonial Plan"; and "Congo Drum-Telegraph Replaced by Radio," March 7, 1949.

FRANK J. MAGEE

MINE WORKERS GATHER ROUND THE PREACHER FOR AN OUTDOOR SERMON IN ELISABETHVILLE

The mining company, in addition to modest wages, furnishes housing, food, medical care, elementary education, and recreational facilities for its employees. Most of Elisabethville is in a more advanced condition than this section, for the company policy is constant improvement.

Bulletin No. 4, October 9, 1950

Threat to Church in Kent Recalls Pocahontas

AN AMERICAN princess more than three centuries ago promoted friendly international and interracial relations. Modern Englishmen believe she can still do a good job of this if she is allowed to rest in peace. A number of prominent Englishmen (including Sir Evelyn Wrench, who wrote "Founders of Virginia" and "The British Way" for the *National Geographic Magazine*) have written letters to the *London Times* protesting the proposal to do away with St. George's Church at Gravesend, in England's county of Kent, where Pocahontas was buried.

Instead of tearing down the church, the letter writers suggest that parish officials give it more attention as a historic shrine. They believe increasing numbers of American visitors could be attracted to this spot so closely associated with Pocahontas.

Most Famous for Captain John Smith Rescue

The tale of Pocahontas, daughter of the Indian chieftain Powhatan, is a pleasant colonial memory on both sides of the Atlantic. The maiden's services as peacemaker between Indians and early Jamestown settlers, and her help in providing food for the starving newcomers, form one of the few cheerful interludes in those hard and hazardous times.

Best known, perhaps, is the story of how young Pocahontas saved the life of the dashing colonial leader, Captain John Smith, when Powhatan's Indians were preparing to execute him. Some historians have expressed doubt of this story, as Smith failed to mention it in his own early chronicle, "A True Relation." Others, who believe the tale, point out that Smith's account had been cut. Smith himself said that the incident happened. In a statement printed in 1624, he told of Pocahontas' intervention after he had been forced to place his head on two big stones under the poised clubs of the braves. When her pleas failed, according to Smith, the little princess put her own head between his and the executioners.

Recommended to Queen Anne

Whatever the truth concerning the rescue, the Indian girl from the beginning found her life entangled with that of the colonists. In 1613, about five years after she had saved Smith's life, Pocahontas—then 18 years old—was captured by the colonists and held at Jamestown as hostage for prisoners in Indian hands. She was kindly treated, taught to speak English, given religious instruction, and baptized in the Christian faith. She was given the name of Rebecca, but it is as Pocahontas that she lives in history and possible legend.

In 1614 she married John Rolfe, a tobacco planter. It was as his wife that she sailed to England with him and her son in 1616. Connected with this visit is further evidence that she really saved Captain Smith's life. To gain her favor and courtesy from Queen Anne, consort of King James I, Smith wrote to the queen, telling of the great service the Indian princess had done the colony. He said emphatically that Pocahontas "next under God was . . . the instrument to preserve this colony from death, famine, and utter confusion." And, referring to the best-known

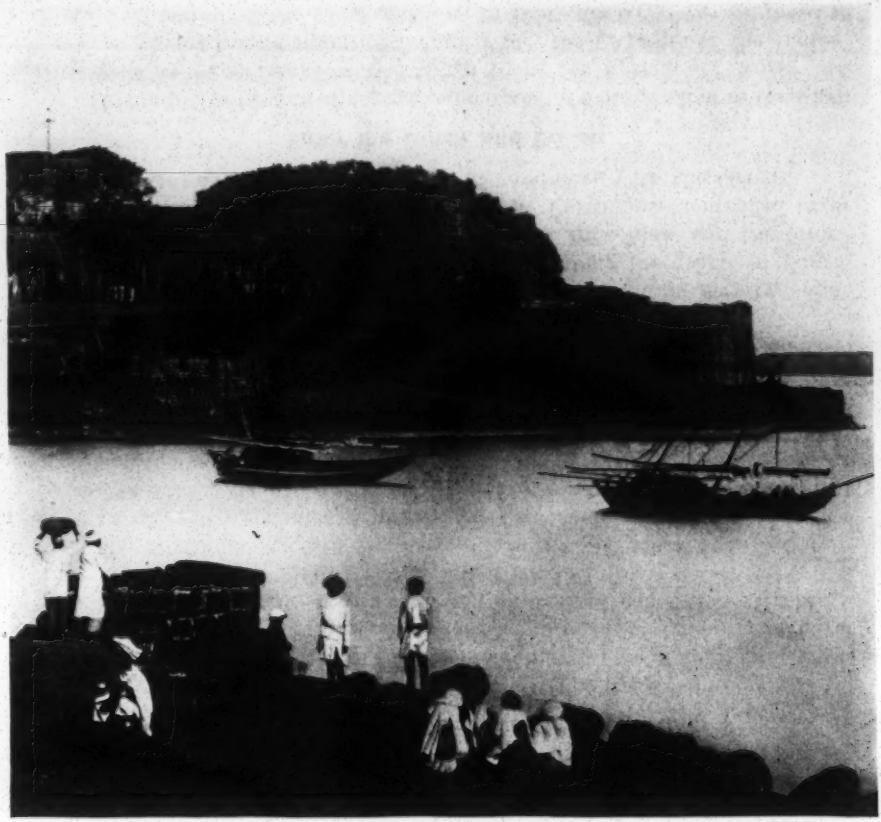
UMI

Damão and Diu, both north of Gôa, add about 240 square miles and 100,000 persons to the totals of Portuguese India.

Portuguese officials still cling to colonial trail-blazing traditions. Each governor general upon his installation receives a staff once used by St. Francis Xavier. The custom dates from the day when an early governor beseeched the intercession of the dead saint in order to save the city from an advancing army of Mahratta raiders. Unaccountably the raiders turned back without attacking the weak garrison.

NOTE: Gôa and Portugal's other territories in India may be located on the Society's map of India and Burma.

For additional information, see "Pathfinder of the East," in the *National Geographic Magazine* for November, 1927.



A LINK IN PORTUGAL'S 16TH-CENTURY EMPIRE WAS THIS MASSIVE STONE FORT, NOW MOLDERING AT GOA

GEOGRAPHIC MAPS—TIMELY AIDS TO EDUCATION

Classrooms need accurate, up-to-date maps for history interpretation and current events analysis. The National Geographic Society's many-color wall maps answer these needs. They cover the world. 50¢ apiece in U. S. and possessions; elsewhere 75¢. Four enlarged maps are $2.00 each in U. S. and possessions; elsewhere $2.25. Send for complete map list.

Colorado River Constantly Lures Explorers

DANGER waits at many places when explorers challenge the violent rapids of the Colorado River on its tortuous journey through Utah and Arizona. The Grand Canyon has some of the roughest spots. The full length of the river's inner gorge can be explored only by boat.

A number of expeditions have tackled the job; some met success, others disaster. This summer a Chicago woman artist ran 170 miles of the upper river alone. A group of four women and eight men pushed into the canyon proper. Before that, a helicopter rescued a party stranded in the Grand Canyon when their boat was smashed.

Major John W. Powell Was First

The Grand Canyon itself is more than 200 miles in length, a mile deep, and ranges in width from four to 18 miles. Erosive action of river and weather formed the chasm over a period of more than a million years. Within its vast recesses the Colorado winds, sometimes placidly, often in a muddy froth.

Major John W. Powell, a one-armed veteran of the Civil War, led the first successful expedition by boat through the canyon in 1869. Three of his nine companions deserted him and were killed by Indians. The others brought their small boats out of the canyon with much valuable geographic information, after a three-month trip.

Powell exploded an old legend that the river disappeared at some points in underground torrents. He made calculations at every turn of the course, often scaling the sheer rock walls for better vantage ground, in spite of his physical handicap. Friends had warned Powell that his project was sheer madness, and the Indians had told him he courted the wrath of the Great Spirit.

Less fortunate was an 1889 expedition led by Frank M. Brown and Robert B. Stanton. Brown and two companions drowned in treacherous Marble Canyon. Another man broke a leg and had to be carried out over a 1,700-foot wall. Stanton brought the remainder of the party safely through. Emery and Ellsworth Kolb, despite some duckings, were able to traverse the full length in 1911 while making the first motion pictures of the canyon's inner fastness.

Flash Flood Forced Moonlight Cruise

Among the most successful "Colorado tamers" were the men of a government survey party. During the summer of 1923 this group mapped the river gorge and double checked previous observations. The dangers and hardships they met in line of duty were recounted by Lewis R. Freeman in the *National Geographic Magazine* of May, 1924.

Freeman told how a sudden flash flood at night nearly swept away their boats, forcing some of the men to take the craft out on the raging river with only pale moonlight for guidance. Capsizings were frequent during the course of this expedition.

The first white men to view the Grand Canyon were Spanish con-

UMI

tale of the princess, he writes, "At the minute of my execution she hazarded the beating out of her owne braines to save mine."

The English visit started out happily. The British royal family, apparently impressed by Smith's enthusiasm, made much of the American princess, "the first Virginian ever to speak English," who had so bravely helped the settlers. But the story ends in tragedy.

When Pocahontas was about to return to America with her husband and child, she fell ill aboard ship off Gravesend (illustration, inside cover). Authorities differ as to whether she died aboard ship or ashore. She was buried at St. George's Church in the Thames-side town.

The church burned in 1727. Bones of persons buried there were moved to a common grave, so later search for the relics of Pocahontas was unsuccessful. In 1732 the present church was built, and in 1914 the Virginia Chapter of the Society of Colonial Dames placed there two stained-glass windows to honor the American who is recorded in the old church register as "Rebecca Wrothe (Rolfe), a Virginia lady borne."

NOTE: Gravesend may be located on the Society's map of The British Isles.

For further information, see "Shrines of Each Patriot's Devotion," in the *National Geographic Magazine* for January, 1949; "Founders of Virginia," April, 1948; and "Time and Tide on the Thames," February, 1939*.

B. ANTHONY STEWART

ON THE SITE OF THE COLONY SHE HELPED SAVE, POCAHONTAS STANDS IMMORTALIZED IN BRONZE

A modern American boy snaps a picture of two American girls, separated by nearly three and a half centuries. The statue of Pocahontas stands in the Jamestown area of Colonial National Historical Park, Virginia, near the monument dedicated in 1907 to the settlers she aided so valiantly.

quistadores in 1540, but for centuries it had been held in fear and awe by the Indians. Navajo legend claims the canyon was formed when the sea rose to great heights and cut the chasm for an outlet. Their ancestors survived, say the Navajos, because the Great Spirit turned them temporarily into fishes.

In recent years running the Colorado and its desert tributary (illustration, below) by boat has become more or less commonplace, though still a great adventure. Stretches above Lees Ferry, Arizona, are most often done. The entire river measures more than 1,400 miles long, rising in Colorado's Rocky Mountain National Park and emptying into the Gulf of California. It drains parts of seven large states—Colorado, Wyoming, Utah, Arizona, New Mexico, Nevada, and California.

NOTE: The course of the Colorado River may be traced on the Society's map of the Southwestern United States.

For further information, see "First Motor Sortie into Escalante Land," in the *National Geographic Magazine* for September, 1949; "Desert River Through Navajo Land," August, 1947; and "Surveying the Grand Canyon of the Colorado," May, 1924.

ALFRED M. BAILEY

BOATS ALMOST DISAPPEAR IN THE ROLLING BILLOWS OF THE DEEP-CUT SAN JUAN

Ahead, the desert stream joins the Colorado. The combined waters then surge past Lees Ferry, Arizona, where this party stopped, and on through the Grand Canyon. Oarsmen hold their specially constructed rowboats sideways and ride the rollers. In choppy rapids they proceed stern-first so they can see where they are going.